



## Site 417 Island Road II

**Overview:** The Island Road II potential restoration site is located off Island Road approximately 850 ft from the intersection with Route 133 in Essex. The site is bordered by Island Road to the east and a former low-lying farm road to the west. The potential restoration site encompasses approximately 1.5 acres of primarily sparsely vegetated shallow pannes fringed by a narrow high marsh. The existing 18 in culvert under Island Road flows in a westerly direction toward Castle Neck River. The marsh bordering the eastern side of the potential restoration site ultimately reaches Hog Island Channel through a series of unnamed ditches and creeks. Island Road is shown on the 1894 USGS Newburyport-Exeter, NH-MA Quadrangle map. The old farm road does not appear on USGS mapping. The limited tidal exchange (primarily due to poor drainage from the site) has resulted in the creation of shallow salt pannes which would otherwise likely support high marsh in comparison to downstream marsh elevations. There are also limited fringing populations of *Phragmites* and purple loosestrife. The site tends to accumulate wrack carried by higher tide events which overtop the low lying farm road. The sparse vegetation is likely attributable to periodic die back from the accumulated wrack. The wrack also tends to block the culvert as water recedes to the west under Island Road. The marsh area is privately held. The roadway right-of-way is site is under town control.

Phase I consisted of replacing a second culvert approximately 500 ft further north along Island Road. This culvert was replaced in 2004 to increase tidal flow primarily to the marsh west of the road. In contrast, regular tidal exchange into the Phase II site is primarily conveyed through a culvert under Island Road from the west.

**Structure conditions:** Portions of Island Road were recently resurfaced, however the section of road adjacent to the potential restoration site is in poor condition. The pavement is severely cracked and has numerous potholes. The roadway is typically 21 feet wide with gravel shoulders. The crossing under the road consists of an 18 in vitrified clay pipe approximately 34 ft in length with approximately 4.2 ft of cover. The pipe is generally in fair condition. There are no headwalls or scour protection at either end. Debris has accumulated at either end of the culvert. The upstream side of the road appears to accumulate a substantial amount of wrack from the marsh to the east which periodically impedes flow through the culvert to the west causing impounded conditions.

**Ecological Integrity:** The potential restoration site generally has a medium level of ecological integrity. The site is privately held, but abuts lands managed by TTOR. The area is contained within the Parker River/Essex Bay ACEC and BioMap Core Habitat. The forest lands to the south are mapped as Supporting Natural Landscape. Surrounding land uses are undeveloped forest lands, low density residential and agricultural. The central portion of the potential restoration site consists of flats, sparsely vegetated with *Salicornia*, and fringed by healthy high marsh. There is a narrow freshwater wetland along the toe of the hill bordering the southern edge of the site which contains some purple loosestrife growing above tidal elevations. There is a small stand of *Phragmites* established along the edge of the road. The former road bed which borders the eastern edge of the potential restoration site is elevated by approximately 0.5 ft above the adjacent marsh and is supporting *Juncus* and sea lavender.

Ground elevations within the zone of *Salicornia* are generally similar to elevations of *S. patens* communities on both sides of Island Road. The die back of *S. patens* within this zone is likely the combination of impounded tidal waters and mats of wrack which accumulate on the marsh plain. Storms out of the northeast carry a substantial quantity of wrack over the low-lying farm road which then accumulates along the eastern edge of Island Road. There are no existing drains which



Great Marsh Coastal Wetlands Restoration Plan  
Rapid Technical Assessment Site 417



extend through the old farm road to the east. Drainage to the west under the road is at times severely obstructed by accumulated wrack that limits drainage through the culvert. The small headwater ditch to the west of Island Road is only approximately 2.0 ft wide and 1.5 ft deep. The hydraulic capacity of the ditch is further limited by encroaching *S. alterniflora*. Saturation within the relatively shallow (approximately 1.8 ft) layer of peat is also prolonged by an underlying horizon of marine clay.

There are several relatively deeply cut ditches within the potential restoration area which were supporting large populations of fish at the time of site inspection. This finding suggests the site is not problematic for mosquito breeding. In addition, the small panne is also well known to local birders for regularly holding small numbers of shore birds. Intertidal flat downstream of the potential restoration site are mapped as suitable habitat for soft-shelled clam.

The overall severity of the existing impairments is considered minimal as die back within portions of a high marsh from the accumulated wrack is a natural condition. There is little question that the location of this area between the old farm road and Island Road aggravates this condition. The replacement of the existing culvert under Island Road with a somewhat larger structure would increase the ability for water to drain to the west. Biological benchmarks suggest the area is not tidally restricted. Drainage from the site would also be enhanced by connecting the existing series of ditches to the ditch system east of the old farm road. Improved drainage would likely allow *S. patens* to colonize portions of the sparsely vegetated zones, but periodical die back from mats of wrack would still continue to occur. As the potential restoration site appears to provide some unusual habitat features and is otherwise not raising public health or other concerns, allowing the site to remain in its current state should be considered.

**Socioeconomic:** The potential restoration site currently provides wildlife viewing opportunities from the road, however the property is privately held and there is no access or parking. Educational opportunities are limited as there is no known ongoing research, nearby schools, or available access. The site's Uniqueness/Heritage value is enhanced by its inclusion within the Parker River/Essex Bay ACEC and listed species habitat. The potential restoration site does not include any known cultural resource elements or urban setting values.

**Construction Logistics/Feasibility:** The feasibility of restoration actions at the site is enhanced by the low traffic volumes, good construction access, lack of underground utilities, limited dewatering requirements and small size of the replacement culvert. If the culvert were replaced with a 36 in culvert, it would help to alleviate some of the periodic obstructions caused by accumulated wrack and debris. There are no low-lying property concerns. The total construction cost for the culvert replacement is estimated to be \$75,000. Similar to Phase I, it may be possible for the Town to contribute in-kind services. The land owner is generally supportive of restoration activities. The earthwork necessary to cut ditching through the old farm road, or to lower the road elevation to match the elevations of the adjacent high marsh, is unwarranted.

**Restoration Potential:** The site is considered to have low restoration potential based primarily on the relatively high per acre cost of restoration and the generally low level of current ecological impairments. The restoration work is, however, relatively straight forward and easily implemented. Further studies should focus on the relative quality of the current habitat characteristics provided by the site, level of interest on the part of the Town in sponsoring the project, and coordination with the Mosquito Management District to assess current public health risks.





**Photo 1 - Overview of Restoration Site from Island Road Viewing East**



**Photo 2 - Culvert Crossing Under Island Road Viewing South**





**Photo 3 - View of Downstream Salt Marsh West of Island Road**



**Photo 4 - Overview of Restoration Area Viewing North**





**Photo 5 - View of Restoration Area from Old Farm Road**





# Great Marsh Coastal Wetlands Restoration Planning

## Rapid Field Assessment

Site # 417  
Island Road II



### Site Information

Site ID:

Site Name:

Municipality:

Location:

Adjacent Waterbody:

### Affected Area (Acres)

Mudflat/Open Water:  Total Area:

Salt Marsh:

Other Wetland:  Other Description:

Other:

### Impairment(s)

Tidal Restriction ☒ Fill ☐

Obstructed Ditch(es) ☒ Invasive Species ☒

Impoundment ☒ Pollution / Siltation ☐

Severity of Impairments

### Project Type

Roadway Culvert(s) ☒ Obstructed Ditches ☒

Bridge ☐ Fill ☐

Berm ☐ Other

### Evidence of Restriction

Gauge Data ☐ Impounded Flow ☐

Downstream Scour Pool ☐ Obstructed Flow ☒

Upstream Scour Pool ☐ Invasive Species ☒

Bank Erosion ☐ Ponded Conditions ☒

Slumping ☐ Subsidence ☐

### Structure / Channel:

Overall Condition:

Life Expectancy (Years):

Road Condition:

Structure Type:

Structure Age (Years)

Structure 1 Width (Feet):

Structure 1 Length (Feet):

Structure 2 Width (Feet):

Structure 2 Length (Feet):

Skew (Degrees):

Cover (Feet):

Scour Protection: ☐

Adequately Aligned: ☒

Headwall Type:

Headwall Condition:

### Ecological Integrity / Habitat Value

Surrounding Land Use %

Commercial / Industrial

Residential

Agricultural

Undeveloped

Severity of Impairment(s)

Invasive Plant Cover:

Extent of Wooded Buffer:

Habitat Connectivity:

NHESP Estimated Habitats of Rare Wildlife: ☐

NHESP Priority Habitats of Rare Species: ☐

NHESP BioMap Core Habitat: ☒

NHESP BioMap Supporting Natural Landscape: ☐

ACEC: ☒

Anadromous Fish: ☐

Shellfishing Suitability: ☒

Barriers to Fish Passage



# Great Marsh Coastal Wetlands Restoration Planning

## Rapid Field Assessment

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### Construction Logistics / Feasibility

Traffic Volume	<input type="text" value="Low"/>
Detour Potential	<input type="checkbox"/>
Site Access	<input type="text" value="Good"/>
Staging Areas	<input checked="" type="checkbox"/>
Fill Material Concern	<input type="text" value="Minimal"/>
Low Lying Property Concerns	<input type="text" value="Minimal"/>
Overhead Utility Constraint	<input type="text" value="Minimal"/>
Underground Utilities	
Water <input type="checkbox"/>	Telephone <input type="checkbox"/>
Gas <input type="checkbox"/>	Sewer <input type="checkbox"/>
Electric <input type="checkbox"/>	Drainage <input type="checkbox"/>
Permitting Complexity	<input type="text" value="Low"/>
Local Support	<input type="text" value="Unknown"/>
Feasibility Cost	<input type="text" value="15,000"/>
Design Cost	<input type="text" value="25,000"/>
Permitting Cost	<input type="text" value="25,000"/>
Construction Cost	<input type="text" value="75,000"/>
Total Cost	<input type="text" value="140,000"/>
Relative Cost/Acre	<input type="text" value="95,000"/>

### Socioeconomic

<b>Recreation</b>	<b>Education</b>
Public Access: <input type="checkbox"/>	Schools Nearby: <input type="checkbox"/>
Watercraft / Portage: <input type="checkbox"/>	Ongoing Research: <input type="checkbox"/>
Wildlife Viewing: <input checked="" type="checkbox"/>	Education / Outreach Potential: <input type="text" value="Low"/>
	Safety Concerns (Access): <input type="text" value="Low"/>
<b>Uniqueness / Heritage Value</b>	
Rare Species Habitat: <input type="checkbox"/>	
ACEC: <input checked="" type="checkbox"/>	
Cultural Resource Features <input type="checkbox"/>	
Urban Viewscape Value: <input type="text" value="None"/>	
Urban Habitat Value: <input type="text" value="None"/>	

### Tide Surveys

	Start:		Finish:	
<b>Dates of 1st Survey:</b>	<input type="text"/>	-	<input type="text"/>	
Date of Highest Tide:	<input type="text"/>			
Max Measured Tidal Dampening:	<input type="text"/>			
Percent of Tidal Prism:	<input type="text"/>			
Measured Delay:	<input type="text"/>			
	Start:		Finish:	
<b>Dates of 2nd Survey:</b>	<input type="text"/>	-	<input type="text"/>	
Date of Highest Tide:	<input type="text"/>			
Max Measured Tidal Dampening:	<input type="text"/>			
Percent of Tidal Prism:	<input type="text"/>			
Measured Delay:	<input type="text"/>			

### Summary

Uniqueness / Heritage Value:	<input type="text" value="Medium"/>	Ecological Integrity:	<input type="text" value="Medium"/>
Recreational Value:	<input type="text" value="Low"/>	Logistics / Feasibility:	<input type="text" value="High"/>
Educational Value:	<input type="text" value="Low"/>		
Restoration Potential:			<input type="text" value="Low"/>